0066682

SAF-B05-032
300-8 Verification
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Jeanette Duncan 3 copy (s) clipped ___NB 8/29/05_
INITIAL/DATE

COMMENTS:

SDG (_W04720_) SAF-B05-032

Rad only Chem only X Rad & Chem

X Complete Partial

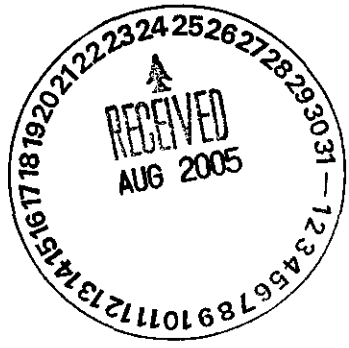
Sample Location/Waste Site: 300-8

SEVERN TRENT STL

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Tel: 314 298 8566 Fax: 314 298 8757
www.stl-inc.com

ANALYTICAL REPORT



PROJECT NO. B05-032

300-8 Verification

Lot #: F5H010145
SDG #: W04720

Joan Kessner

Bechtel Hanford, Inc.
3190 George Washington Way
MSIN H9-02
Richland, WA 99352

SEVERN TRENT LABORATORIES, INC.

Melania Harris
Project Manager

August 22, 2005

Case Narrative
LOT NUMBER: F5H010145
SDG Number : W04720

This report contains the analytical results for the sample received under chain of custody by STL St. Louis on July 29, 2005. This sample is associated with your 300-8 Verification project.

The analytical results included in this report meet all applicable quality control procedure requirements.

The test results in this report meet all NELAP requirements for parameters in which accreditations are held by STL St. Louis. Any exceptions to NELAP requirements are noted in the case narrative. The case narrative is an integral part of this report.

All chemical analysis results are based upon sample as received, wet weight, unless noted otherwise. All radiochemistry results are based upon sample as dried and ground with the exception of tritium, unless requested wet weight by the client.

Observations/Nonconformances

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Metals

There were no observations or nonconformances to report for these analyses.

SAMPLE SUMMARY

F5H010145

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
HGNXE	001	J03VH1	07/27/05	08:25

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

METHODS SUMMARY

F5H010145

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Percent Moisture	MCAWW 160.3 MOD	MCAWW 160.3 MOD
Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B	SW846 3050B

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

LOT# F5H010145 REVISED

STL ST. LOUIS

Bechtel Hanford Inc. — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B05-032-05 Page 1 of 1

Collector Fahlberg	Company Contact Jeff Lerch	Telephone No. 373-5904	Project Coordinator KESSNER, JH
Project Designation 300-8 Verification	Sampling Location 300-8 Aluminum Shavings Area		SAF No. B05-032
Ice Chest No. AFS 04 058	Field Logbook No. EL 1395-11	COA RG30082000	Method of Shipment Fed EX
Shipped To Severn Trent Incorporated, ~~Richland~~ ST LOUIS MO 72805	Offsite Property No. A050 351		Bill of Lading/Air Bill No. See OSPC

Price Code 8-C 15-21

Air Quality ☐

Data Turnaround 15 Days

QUOTE=65967-W04653

POSSIBLE SAMPLE HAZARDS/REMARKS

Non Rad Area, No Activity Report Required

Special Handling and/or Storage

None

			Preservation	None	None									
			Type of Container	aG	aG									
			No. of Container(s)	1	1									
			Volume	60mL	60mL									
SAMPLE ANALYSIS				ICP Metals - 6010A (Supertrace Add-On) {Beryllium}	Isotopic Uranium (struck: 72805)									
Sample No.	Matrix *	Sample Date	Sample Time											
J03VH1	SOIL	7.27.05	0825	x	~~x~~				606					

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg R. Fahlberg	7.27.05 1000	ZC 3728	7.27.05 1000
Ref ZC 3728	72805 0800	SJ FALE [signature]	72805 0800
SJ FALE [signature]	72805 0800	FED EX	
		8 80	

SPECIAL INSTRUCTIONS

None

Personnel not available to relinquish samples from 3728 Ref # ZC on 7/28/05

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By [signature] 7/29/05 0845	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

SDG# W04720

SEVERN TRENT **STL**

Lot No(s) F5H010145

(Note all associated lot No's)

Condition Upon Receipt Form
St. Louis Laboratory

Client: STL Richland COC/RFA No: Date: 7/29/05
Quote No: 65967 Initiated By: BD Time: 0941

Shipping Information

Shipper Name: FE
Shipper No(s):* 1. 7115193 5810
2.
3.
4.
5.

*Numbered shipping lines correspond to Numbered Sample Temp lines.

Multiple Packages: Y N N/A
Sample Temperature(s):** 1. ambient
2.
3.
4.
5.

**Sample must be received at 4°C ± 2°C-If not, note contents below. Temperature variance does NOT affect the following analysis/matrix: Metals-Liquid Rad tests –Liquids or Solids.

Condition/Variance (Circle "Y for yes, "N" for no and "N/A" for not applicable):

1.	(Y) N	Sample received in undamaged condition?	7.	(Y) N	Sample received with Chain of Custody?
2.	Y N (N/A)	Sample received with proper pH[1]? (N/A for soil samples)	8.	(Y) N	Chain of Custody matches sample IDs on container(s)?
3.	X (N)	If N/A-Was pH taken by original STL Lab?	9.	(Y) N N/A	Custody seal received intact?
4.	(Y) N	Sample received in proper containers?	10.	Y (N) N/A	Custody seal tamper evident?
5.	(Y) N	Sample volume sufficient for analysis?	11.	(Y) N N/A	Custody seal on bottles intact?
6.	Y N (N/A)	Headspace in VOA or TOX liquid samples? (If yes, note sample ID's below)	12.	Y (N) N/A	Custody seal tamper evident?
[1] For DOE-AL (Pantex, LANL, Sandia) sites, verify pH of all containers received, EXCEPT VOA, TOX, and soils.			13.	Y N N/A	Was Internal COC/CUR rec'd?

Notes:

Corrective Action:

☐ Client's Name: _____ Informed by: _____ By: _____

☐ Sample(s) processed "as is". _____

☐ Sample(s) on hold until: _____ If released, notify: _____

Project Management Review: _____ Date: 8/1/05

THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED IN. IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIAL AND THE DATE NEXT TO THAT ITEM.

METALS

Bechtel Hanford, Inc.

Client Sample ID: J03VH1

TOTAL Metals

Lot-Sample #...: F5H010145-001 **Matrix.....:** SOLID
Date Sampled...: 07/27/05 **Date Received..:** 07/29/05
% Moisture.....: 0.57

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 5214091						
Beryllium	**0.53**	**0.50**	**mg/kg**	**SW846 6010B**	**08/02-08/03/05**	**HGNKE1AA**
		Dilution Factor: 1		MDL.....: 0.038		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F5H010145 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: F5H020000-091 **Prep Batch #...:** 5214091						
Beryllium	ND	0.50	mg/kg	SW846 6010B	08/02-08/03/05	HGPVK1AA
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F5H010145 **Matrix.....:** SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: F5H020000-091 **Prep Batch #...:** 5214091							
Beryllium	94.4	102	mg/kg	108	SW846 6010B	08/02-08/03/05	HGPVK1AC
Dilution Factor: 1							

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F5H010145 **Matrix.....:** SOLID
Date Sampled...: 07/27/05 **Date Received..:** 07/29/05

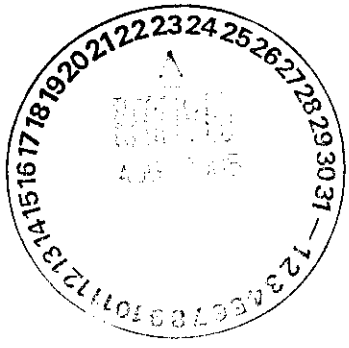
PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: F5H010145-001 **Prep Batch #...:** 5214091									
								% Moisture.....: 0.57	
Beryllium									
	0.53	5.03	5.66	mg/kg	102		SW846 6010B	08/02-08/03/05	HGNXE1AD
	0.53	5.03	5.67	mg/kg	102	0.21	SW846 6010B	08/02-08/03/05	HGNXE1AE

Dilution Factor: 1

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.



Analytical Data Package Prepared For

Bechtel Hanford

Radiochemical Analysis By

STL Richland

2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.

Assigned Laboratory Code: STLRL

Data Package Contains 18 Pages

Report No.: 29724

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
W04720	B05-032	J03VH1	J5G280311-1	HGG3H1AA	9HGG3H10	5213348

Certificate of Analysis

Bechtel Hanford, Inc.
3350 George Washington Way
Richland, WA 99352

August 22, 2005

Attention: Joan Kessner

SAF Number	:	B05-032
Date SDG Closed	:	July 28, 2005
Number of Samples	:	One (1)
Sample Type	:	Soil
SDG Number	:	W04720
Data Deliverable	:	14-Day / Summary

CASE NARRATIVE

I. Introduction

On July 28, 2005, one soil samples were received at STL Richland (STLR) for radiochemical analysis. Upon receipt, the samples were assigned the STLR identification numbers as described on the cover page of the Analytical Data Package report form. These samples were assigned to Lot Number J5G280311.

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analyses were:

Alpha Spectroscopy
Uranium-234, -235, -238 by method RICH-RC-5079

IV. Quality Control

The analytical results for each analysis performed under SDG W04634 includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

V. Comments

Alpha Spectroscopy
Uranium-234, -235, -238 by method RICH-RC-5079:
The LCS, batch blank, samples and sample duplicate (J03VH1) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:

Hans Carman
Project Manager

Drinking Water Method Cross References

	DRINKING WATER ASTM METHOD CROSS REFERENCES	
Referenced Method	**Isotope(s)**	**STL Richland's SOP number**
EPA 901.1	Cs-134, I-131	RICH-RC-5017
EPA 900.0	Alpha & Beta	RICH-RC-5014
EPA 903.1	Ra-226	RICH-RC-5005
EPA 904.0	Ra-228	RICH-RC-5005
EPA 905.0	Sr89/90	RICH-RC-5006
ASTM D2460	Total Radium	RICH-RC-5027
Standard Method 7500-U-C & ASTM D5174	Uranium	RICH-RC-5058
EPA 906.0	Tritium	RICH-RC-5007
NOTE:		
The Gross Alpha LCS is prepared with Am-241 (unless otherwise specified in the case narrative)		
The Gross Beta LCS is prepared with Sr/Y-90 (unless otherwise specified in the case narrative)		

Uncertainty Estimation

STL Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, R = constants * f(x,y,z,...). The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/vn), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or STL Richland.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) *u_c - Combined Uncertainty.*	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, *u_c the combined uncertainty*. The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or STL Richland "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. Lc=(1.645 * Sqrt(2*(BkgrndCnt/BkgrndCntMin)/SCntMin)) * (ConvFct/(Eff*Yld*Abn*Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC|MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. MDC = (4.65 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the **Work Order** Number.
RER	The equation Replicate Error Ratio = (S-D)/[sqrt($TPUs^2$ + $TPUd^2$)] as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by STL Richland upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Sample Results Summary

Date: 23-Aug-05

STL Richland STLRL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 29724

SDG No: W04720

Batch	Client Id / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	MDC or MDA	CRDL	RPD
5213348	**UISO_IE_PLATE_AEA**								
	J03VH1								
	HGG3H1AA	U-234	8.24E-01 +- 3.0E-01		pCi/g	66%	1.26E-01	1.00E+00	
		U-235	6.87E-03 +- 3.5E-02	U	pCi/g	66%	1.08E-01	1.00E+00	
		U-238	6.56E-01 +- 2.5E-01		pCi/g	66%	1.18E-01	1.00E+00	
	J03VH1 DUP								
	HGG3H1AC	U-234	6.78E-01 +- 2.5E-01		pCi/g	76%	8.15E-02	1.00E+00	19.5
		U-235	2.95E-02 +- 4.4E-02	U	pCi/g	76%	6.48E-02	1.00E+00	124.4
		U-238	5.40E-01 +- 2.1E-01		pCi/g	76%	7.43E-02	1.00E+00	19.5

No. of Results: 6

STL Richland **RPD** - Relative Percent Difference.

rptSTLRchSaSummary2 V4.14.1 A97 **U Qual** - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

QC Results Summary

STL Richland STLRL

Ordered by Method, Batch No, QC Type,.

Date: 23-Aug-05

Report No. : 29724 **SDG No.:** W04720

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	Recovery	Bias	MDC|MDA
UISO_IE_PLATE_AEA								
5213348 BLANK QC								
HGNWL1AA	U-234	9.39E-03 +- 2.7E-02	U	pCi/g	88%			7.05E-02
	U-235	-4.02E-03 +- 4.7E-03	U	pCi/g	88%			7.05E-02
	U-238	2.28E-02 +- 4.8E-02	U	pCi/g	88%			1.07E-01
5213348 LCS								
HGNWL1AC	U-234	2.90E+00 +- 6.8E-01		pCi/g	98%	89%	-0.1	8.47E-02
	U-238	3.10E+00 +- 7.2E-01		pCi/g	98%	91%	-0.1	7.40E-02

No. of Results: 5

STL Richland
rptSTLRchQcSummary V4.14.1 A97

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM I

SAMPLE RESULTS

Date: 23-Aug-05

Lab Name:	STL Richland	**SDG:**	W04720	**Collection Date:**	7/27/2005 8:25:00 AM
Lot-Sample No.:	J5G280311-1	**Report No. :**	29724	**Received Date:**	7/28/2005 11:45:00 AM
Client Sample ID:	J03VH1	**COC No. :**	B05-032-05	**Matrix:**	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 5213348	UISO_IE_PLATE_AEA			**Work Order:** HGG3H1AA		**Report DB ID:** 9HGG3H10						
U-234	***8.24E-01***		2.4E-01	3.0E-01	1.26E-01	pCi/g	66%	*(6.5)*	8/19/05 05:34 p		1.09	ALP1
						4.00E-02	1.00E+00	*(5.6)*			G	
U-235	***6.87E-03***	U	3.5E-02	3.5E-02	1.08E-01	pCi/g	66%	*0.06*	8/19/05 05:34 p		1.09	ALP1
						3.09E-02	1.00E+00	*0.39*			G	
U-238	***6.56E-01***		2.1E-01	2.5E-01	1.18E-01	pCi/g	66%	*(5.6)*	8/19/05 05:34 p		1.09	ALP1
						3.57E-02	1.00E+00	*(5.2)*			G	

Ratio U-234/238 = 1.3

No. of Results: 3 **Comments:**

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 23-Aug-05

DUPLICATE RESULTS

Lab Name:	STL Richland	**SDG:**	W04720	**Collection Date:**	7/27/2005 8:25:00 AM
Lot-Sample No.:	J5G280311-1	**Report No. :**	29724	**Received Date:**	7/28/2005 11:45:00 AM
Client Sample ID:	J03VH1 DUP	**COC No. :**	B05-032-05	**Matrix:**	SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 5213348	UISO_IE_PLATE_AEA			Work Order: HGG3H1AC		Report DB ID: HGG3H1CR			Orig Sa DB ID: 9HGG3H10			
U-234	6.78E-01		2.1E-01	2.5E-01	8.15E-02	pCi/g	76%	(8.3)	8/19/05 05:34 p		1.05	ALP2
	8.24E-01		RPD 19.5			1.00E+00		(5.5)			G	
U-235	2.95E-02	U	4.4E-02	4.4E-02	6.48E-02	pCi/g	76%	0.45	8/19/05 05:34 p		1.05	ALP2
	6.87E-03	U	RPD 124.4			1.00E+00		(1.3)			G	
U-238	5.40E-01		1.8E-01	2.1E-01	7.43E-02	pCi/g	76%	(7.3)	8/19/05 05:34 p		1.05	ALP2
	6.56E-01		RPD 19.5			1.00E+00		(5.)			G	

Ratio U-234/238 = 1.3 ***Alpha Spec Result Sum = 1.2E+00***

No. of Results: 3 **Comments:**

RPD - Relative Percent Difference.

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM II

BLANK RESULTS

Date: 23-Aug-05

Lab Name: STL Richland **SDG:** W04720

Matrix: SOIL **Report No. :** 29724

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA ,	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 5213348	UISO_IE_PLATE_AEA			**Work Order:** HGNWL1AA		**Report DB ID:** HGNWL1AB						
U-234	9.39E-03	U	2.7E-02	2.7E-02	7.05E-02	pCi/g	88%	0.13	8/19/05 05:35 p		1.0	ALP3
					1.71E-02	1.00E+00		0.69			G	
U-235	-4.02E-03	U	4.6E-03	4.7E-03	7.05E-02	pCi/g	88%	-0.06	8/19/05 05:35 p		1.0	ALP3
					1.71E-02	1.00E+00		-(1.7)			G	
U-238	2.28E-02	U	4.7E-02	4.8E-02	1.07E-01	pCi/g	88%	0.21	8/19/05 05:35 p		1.0	ALP3
					3.56E-02	1.00E+00		0.96			G	

Ratio U-234/238 = 0.4

No. of Results: 3 **Comments:**

STL Richland
rptSTLRchBlank
V4.14.1 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

LCS RESULTS

Date: 23-Aug-05

Lab Name: STL Richland **SDG:** W04720

Matrix: SOIL **Report No. :** 29724

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 5213348	UISO_IE_PLATE_AEA			**Work Order:**	HGNWL1AC		**Report DB ID:**	HGNWL1CS					
U-234	2.90E+00		3.8E-01	6.8E-01	8.47E-02	pCi/g	98%	3.24E+00	2.0E-02	89%	8/19/05 05:35 p	1.0	ALP4
							Rec Limits:	70	130	-0.1		G	
U-238	3.10E+00		3.9E-01	7.2E-01	7.40E-02	pCi/g	98%	3.40E+00	2.1E-02	91%	8/19/05 05:35 p	1.0	ALP4
							Rec Limits:	70	130	-0.1		G	

No. of Results: 2 **Comments:**

SEVERN TRENT STL

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

8/22/2005 11:35:52 AM

Lot No., Due Date: J5G280311; 08/12/2005

Client, Site: 127642; HANFORD

QC Batch No., Method Test: 5213348; RUISO Uiso by ALP

SDG, Matrix: W04720; SOIL

	Yes	No	N/A
1.0 COC			
1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?	✓		
2.0 QC Batch			
2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2.2 Are the QC appropriate for the analysis included in the batch?	✓		
2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?	✓		
2.4 Does the Worksheets include a Tracer Vial label for each sample?	✓		
3.0 QC & Samples			
3.1 Is the blank results, yield, and MDA within contract limits?	✓		
3.2 Is the LCS result, yield, and MDA within contract limits?	✓		
3.3 Are the MS/MSD results, yields, and MDA within contract limits?			✓
3.4 Are the duplicate result, yields, and MDAs within contract limits?	✓		
3.5 Are the sample yields and MDAs within contract limits?	✓		
4.0 Raw Data			
4.1 Were results calculated in the correct units?	✓		
4.2 Were analysis volumes entered correctly?	✓		
4.3 Were Yields entered correctly?			✓
4.4 Were spectra reviewed/meet contractual requirements?	✓		
4.5 Were raw counts reviewed for anomalies?	✓		
5.0 Other			
5.1 Are all nonconformances included and noted?			✓
5.2 Are all required forms filled out?	✓		
5.3 Was the correct methodology used?	✓		
5.4 Was transcription checked?	✓		
5.5 Were all calculations checked at a minimum frequency?	✓		
5.6 Are worksheet entries complete and correct?	✓		

6.0 Comments on any No response:

First Level Review Paul Anderson **Date** 8.22.05

SEVERN TRENT **STL**

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 521348

Review Item	Yes (√)	No (√)	N/A (√)
A. Sample Analysis 1. Are the sample yields within acceptance criteria?	✓		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples 1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
8. Do the MS/MSD results and yields meet acceptance criteria?			✓
9. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other 1. Are all Nonconformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?			

Comments on any "No" response: _____

Second Level Review: _____ Date: 5-22-05

BHI 27058

STL RICHLAND

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B05-032-05	Page 1 of 1
Collector: Fahlberg	Company Contact: Jeff Lerch	Telephone No.: 373-5904	Project Coordinator: KESSNER, JH	Price Code: 8-C, 15-21 / Air Quality ☐
Project Designation: 300-8 Verification	Sampling Location: 300-8 Aluminum Shavings Area		SAF No.: B05-032	Data Turnaround: 15 Days
Ice Chest No.: AFS 04055	Field Logbook No.: EL 1395-11	COA: RG30082000	Method of Shipment: Fed EX	
Shipped To: Severn Trent Incorporated, Richland	Offsite Property No.: NA		Bill of Lading/Air Bill No.: ~~See OSPC~~ NA 72584	

POSSIBLE SAMPLE HAZARDS/REMARKS
Non Rad Area, No Activity Report Required

Special Handling and/or Storage
None

W04720
J504280311
Due 081205

Preservation	None	None									
Type of Container	aG	aG									
No. of Container(s)	1	1									
Volume	60mL	60mL									
SAMPLE ANALYSIS	ICP Metals - 6010A (SuperTrace Add-On) (Beryllium)	Isotopic Uranium									
Sample No.	Matrix *	Sample Date	Sample Time								
J03VH1 HGG3H	SOIL	7-27-05	0825	X	X						

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: R. Fahlberg	Date/Time: 7-27-05 1000	Received By/Stored In: 2C 3728	Date/Time: 7-27-05 1000
Relinquished By/Removed From: REF 2C 3728	Date/Time: 72805 0800	Received By/Stored In: SJ Hale	Date/Time: 72805 0800
Relinquished By/Removed From: SJ Hale	Date/Time: 72805 1145	Received By/Stored In: Jeff Jensen STL	Date/Time: 072805 1145
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS
None

<100 CPM

Personnel not available to relinquish samples from 3728
Ref # 2C on 7/28/05

Matrix *
S=Soil
SF=Sediment
SO=Solid
SI=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

SEVERN TRENT STL

Sample Check-in List

Date/Time Received: 07 28 05 1145

Client: BHI SDG #: W04720 NA [ ] SAF #: 05-032 NA [ ]

Work Order Number: JSL280311 Chain of Custody # 05-032-05

Shipping Container ID: MFS 04 0555 Air Bill # _____

1. Custody Seals on shipping container intact? NA [✓] Yes [ ] No [ ]
2. Custody Seals dated and signed? NA [✓] Yes [ ] No [ ]
3. Chain of Custody record present? Yes [✓] No [ ]
4. Cooler temperature: _____ NA [✓] 5. Vermiculite/packing materials is NA [✓] Wet [ ] Dry [ ]
6. Number of samples in shipping container: 1
7. Sample holding times exceeded? NA [✓] Yes [ ] No [ ]
8. Samples have:
   - _____ tape
   - ✓ custody seals
   - _____ hazard labels
   - _____ appropriate samples labels
9. Samples are:
   - ✓ in good condition
   - _____ broken
   - _____ leaking
   - _____ have air bubbles

   (Only for samples requiring head space)
10. Sample pH taken? NA [✓] pH<2 [ ] pH>2 [ ] pH>9 [ ]
11. Sample Location, Sample Collector Listed? * Yes [✓] No [ ]
    *For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [ ] No [✓]
13. Description of anomalies (include sample numbers): _____

Sample Custodian: _____ Date: 07 28 05

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ by _____ Person contacted _____

[ ] No action necessary; process as is.

Project Manager _____ Date _____

LS-023, 9/03, Rev. 5

STL RICHLAND

8/16/2005 8:17:46 AM

Sample Preparation/Analysis

127642, Bechtel Hanford, Inc. , Bechtel Hanford, Inc.

7S Ulso PrpRC5013/RC5019, SepRC~~5079~~(5039) 5067 af 8/19/05

SR Uranium-234,235,238 by Alpha Spec

5I CLIENT: HANFORD

Balance Id:1120373922

Pipet #: _____

Report Due: 08/12/2005 WO 4720

Batch: 5213348 SOIL pCi/g

SEQ Batch, Test: None All Tests: 5213348 7SSR,

PM, Quote: BG2, 27038

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

Prep Tech: ,HansenM

[redacted]

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 HGG3H-1-AA J5G280311-1-SAMP [redacted] 07/27/2005 08:25		1.09g,in AmtRec: 60MLAG	UITC13460 08/16/05,pd 03/22/05,r #Containers: 1	100		Scr Rst:	Alpha: 8.21E+01 pCi/g	Beta: 2.00E+01 pCi/g
2 HGG3H-1-AC-X J5G280311-1-DUP [redacted] 07/27/2005 08:25		1.05g,in AmtRec: 60MLAG	UITC13461 08/16/05,pd 03/22/05,r #Containers: 1			Scr Rst:	Alpha: 8.21E+01 pCi/g	Beta: 2.00E+01 pCi/g
3 HGNWL-1-AA-B J5H010000-348-BLK [redacted] 07/27/2005 08:25		1.00g,in AmtRec:	UITC13462 08/16/05,pd 03/22/05,r #Containers: 1			Scr Rst:	Alpha:	Beta:
4 HGNWL-1-AC-C J5H010000-348-LCS [redacted] 07/27/2005 08:25		1.00g,in AmtRec:	UISH0373 07/27/05,pd 03/22/05,r #Containers: 1			Scr Rst:	Alpha:	Beta:

Comments: Samples were received by RC 5080. 8/18/05

Samples were matched. 8/18/05

All Clients for Batch:
127642, Bechtel Hanford, Inc. Bechtel Hanford, Inc. , BG2, 27038

HGG3H1AA-SAMP Constituent List:

U-232	RDL:	pCi/g	LCL:20	UCL:105	RPD:35	U-234	RDL:1	pCi/g	LCL:	UCL:	RPD:
U-235	RDL:1	pCi/g	LCL:	UCL:	RPD:	U-238	RDL:1	pCi/g	LCL:	UCL:	RPD:

HGNWL1AA-BLK:

U-232	RDL:	pCi/g	LCL:20	UCL:105	RPD:35	U-234	RDL:1	pCi/g	LCL:	UCL:	RPD:
U-235	RDL:1	pCi/g	LCL:	UCL:	RPD:	U-238	RDL:1	pCi/g	LCL:	UCL:	RPD:

8/22/2005 11:57:44 AM

ICOC Fraction Transfer/Status Report

ByDate: 8/22/2004, 8/27/2005, Batch: '5213348', User: *ALL Order By DateTimeAccepting

Q	Batch	Work Ord	CurStatus	Accepting		Comments
5213348						
AC			CalcC	HansenM	8/16/2005 8:13:21	
SC				wagarr	IsBatched 8/1/2005 11:27:11 AM	ICOC_RADCALC v4.8.08
SC				HansenM	InPrep2 8/16/2005 8:13:21 AM	RICH-RC-5019 REVISION 5
SC				WAGNERJ	Prep2C 8/18/2005 7:52:18 PM	RICH-RC-5086 REVISION 2
SC				FinchA	InSep1 8/19/2005 9:39:30 AM	RICH-RC-5067 REVISION 6
SC				FinchA	Sep1C 8/19/2005 10:18:40 AM	RICH-RC-5067 REVISION 6
SC				BarbosaH	InSep2 8/19/2005 11:35:08 AM	RICHRC5039 REV4
SC				BarbosaH	Sep2C 8/19/2005 2:46:57 PM	RICHRC5039 REV4
SC				DAWKINSO	InCnt1 8/19/2005 4:58:07 PM	RICH-RD-0008 REVISION 4
SC				DAWKINSO	CalcC 8/19/2005 8:45:59 PM	RICH-RD-0008 REVISION 4
AC				WAGNERJ	8/18/2005 7:52:18 PM	
AC				FinchA	8/19/2005 9:39:30	
AC				FinchA	8/19/2005 10:18:40	
AC				BarbosaH	8/19/2005 11:35:08	
AC				BarbosaH	8/19/2005 2:46:57 PM	
AC				DAWKINSO	8/19/2005 4:58:07 PM	
AC				DAWKINSO	8/19/2005 8:45:59 PM	

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Page 1

Grp Rec Cnt: 8

ICOCFractions v4.8.13